What is the effect of lockdown upon hospitalisation due to COVID-19 amongst patients from a heart failure registry?

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Introduction

Coronavirus disease 2019 (COVID-19) is associated with a mortality risk in heart failure (HF) patients [2]. In order to curb the spread of the virus, the UK government announced a national lockdown in March 2020. Whilst there is data [4, 5] [6] regarding the prognosis of HF patients hospitalised with COVID-19, the impact of lockdown upon in incidence of hospitalisation, is unknown.

Methods

Our single centre, retrospective observational study was undertaken in a British university hospital to analyse the effect of lockdown upon COVID-19 hospitalisations amongst HF patients and the predictors of risk. We collated data regarding co-morbidities (Charlson Co-morbidity Index-CCI), [7], the Rockwood clinical frailty score (CFS), clinical features, blood results, HF treatments and 30 day mortality.

Results

We identified 1097 HF patients from our existing HF registry with HF hospitalisation in 2018 and 2019. 50/801 (6.2%) surviving HF patients required hospitalisation due to COVID-19 from March-November 2020 ("COVID group"); 24 patients (3.1%) during the first lockdown (March-June 2020) and 26 (3.5%) in the post-lockdown period (July- November 2020); p=0.7. In comparison to patients not hospitalised with COVID-19 ("no-COVID group), the COVID group had a significantly higher prevalence of co-morbidities (Table 1) - hypertension (p<0.001), diabetes (p=0.005), ischaemic heart disease (p=0.01) and increased body mass index (p=0.04). This data is in line with other studies [2,6,12,13]. CCI was also significantly higher in the COVID group (6.5±1.5 versus no-COVID group 5.7±1; p<0.001). The COVID group was frailer (Rockwood CFS in COVID group 6.5±1.5 vs. 6.1±1.1 in No-COVID group; p=0.02). HF patients hospitalised with COVID had a longer hospital stay than for HF (median 14.5 days vs. 8 days; p<0.001) and 30 day mortality was 52%.

Table 2 illustrates mortality predictors. Whilst the incidence of diabetes, hypertension and frailty was significantly higher amongst the group that died within 30 days, multivariate regression analysis demonstrated that only diabetes (OR 3.82;95% CI 1.13 to 12.95; p=0.03) and Rockwood Frailty Score ≥6 (OR 6.530695 % CI:1.8958 to 22.4961; p=0.003), were independent predictors of mortality.

Conclusions

Our study showed a similar incidence of COVID-19 hospitalisation pre- and post-lockdown amongst HF patients. The incidence of COVID-19 hospitalisation in our HF cohort (3.1%), was similar to the overall incidence during the first wave in England (3.5%) [10]. It can only be surmised that HF patients have been taking adequate shielding precautions in view of media reports of higher risk of complications amongst patients with cardiovascular co-morbidities. It is also possible that the anxiety felt by HF patients and their reluctance to attend hospital may also have resulted in reduced hospitalisations due to COVID-19 [11]. 30-day mortality due to COVID-19 hospitalisation was high (54%) in our HF cohort, comparable to other studies [6, 12],[13]

Study limitations include the single centre, retrospective observational design and relatively small number of COVID-19 hospitalisations in this cohort.

In conclusion, our data suggests that lockdown did not seemingly affect incidence of hospitalisation due to COVID amongst patients from our HF registry. Co-morbidity and frailty scores should be incorporated during initial clinical assessment to aid risk-prediction for 30 day mortality.

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Table 1: Comparison of HF patient characteristics (COVID versus no COVID)

Baseline Characteristics	COVID (n=50)	NO COVID (n=751)	p
Age	75.3 ± 10	73 ±14.1	NS
Female	40%	46%	0.4
DM	27/50 74%	225/751 30%	<0.001
HTN	41/50 82%	466/751 40%	0.005
IHD	29/50 58%	301/751 40%	0.01
COPD	11/50 22%	233/751 31%	0.18
CKD	27/50 54%	370/751 (49%)	0.52
AF	25/50 50%	413/701	0.2
Charlson Age adjusted Comorbidity Index	6.5±1.5	6.1±1.1	0.01
Rockwood Frailty Index	5.8±1.9	5.1±1.7	0.005
Beta blocker	78%	653/751	0.15
Mineralocorticoid antagonist	28%	262/751	0.43
ACE/ARB/ARNI	65%	81%	0.05
Device therapy	7%	60/751	0.95
Average length of stay	15.6 (± 14.8) Median 14.5 (3-57)	8.6 8 (1-43)	<0.01
HFpEF	36%	32%	0.92
BMI	33.67 (±9.1)	31.1±8.1	0.04
NTpro-BNP	6242 (415-24000)	3564 (515-7000)	0.07
Hb	118.5± 19.2	119±20.5	0.83
Urea	6.9± 3.9	8±4	0.2
Creatinine	154±71	128±69	0.05
Sodium	136±5.3	139+4.5	<0.001
GWTG	43±7.1	38.8±6.4	<0.001

Table 1. Demographic data and background of patients admitted with COVID vs Non-COVID. p<0.05 is taken to mean statistical significance.

Table 2: Comparison of HF patient characteristics (DEAD versus ALIVE)

Baseline Characteristics	DEAD (n=27)	ALIVE (23)	p
Age	77.8±8.9	73.9 ±10.1	0.2
Female			
DM	21/6	11/12	0.03 (OR 3.82;95% CI 1.13 to 12.95)
HTN	21/27	12/23	0.06 OR 3.2 (95% CI 0.9456 to 10.8858)
IHD	15/12	10/13	0.4 (OR 1.63 CI 0.5 TO 5)
COPD	7/27	4/23	0.5 (OR 0.9 CI 0.3 TO 2.96
CKD	15/27	12/23	0.81 (OR 1.15 CI 0.38 to 3.5)
AF	14/27	11/23	0.37
Charlson Age adjusted Comorbidity Index	6.5 ± 1.6	5.9 ±1.3	0.15
Rockwood Frailty Index	6.2±1	5.4±1	0.006 (≥6; OR 6.530695 % CI:1.8958 to 22.4961; p=0.003)
Beta blocker	71%	80%	0.22
Mineralocorticoid antagonist	31%	24%	0.45
ACE inhibitor	61%	71%	0.18
HFrEF			0.9
BMI	33.6±8	31.8±7.5	0.4
NTpro-BNP	6807(1810- 24305)	5700 (1653-17000)	0.91
Hb	121± 20	115± 18	0.33
Lymphocyte count	1±0.4	1.1±0.5	0.5
BUN	6.9±4	6.7±3.5	0.9
Creatinine	153± 98	150± 65	0.9
Sodium	134.3± 5.9	136.7± 4.3	0.42
BP	134±29	146±32	0.17
HR	88±20	78±19	0.2

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Graduated from Bangalore Medical College and Research Institute, India, Cardiology training in North West England
PhD (University of Manchester) through a fellowship grant awarded by British Heart Foundation. Since 2016, Clinical Lead for Heart Failure at Liverpool University Hospitals NHS Foundation Trust (Aintree, Community Heart Failure Services), as well as the lead for the award-winning Ambulatory Heart Failure Unit.
Received National Roy Award from Pumping Marvellous in 2018 Innovations in HF such as developing UK's 1st NHS Heart Failure Mobile APP – Aintree Heart Failure Passport, Nominated for hospital Innovator of the year.
One of 15 cardiologists in the UK, selected by the British Cardiac Society for the inaugural Emerging Leadership Program and appointed to the British Cardiac Society Digital and Communications Committee.
Active research role as NIHR Research Scholar and Honorary Senior Clinical Lecturer at Liverpool Centre for Cardiovascular Science (University of Liverpool).
PI for several multi-centre national and international clinical trials in heart failure
Research Interests: Cardio-Renal Syndrome, novel biomarkers, Digital Technologies in Heart Failure, Frailty in Heart Failure, Clinical Risk Scores

OBITUARY

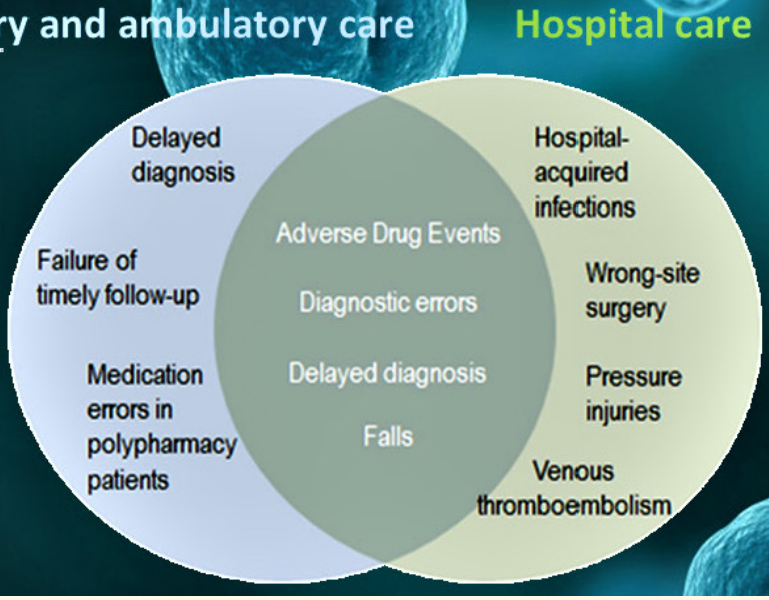
Dr KK Aggarawal
5th September,1958 -17th May 2021

Dr KK Aggarwal, Padma Shri awardee and former national president of the Indian Medical Association (IMA), passed away on 17th May 2021 after a long battle with Covid-19 at New Delhi's AIIMS. His life was dictated to the welfare of the public and raising health awareness. During the COVID pandemic he made constant efforts to collate and determinate information relevant to the medical profession. He was an outspoken personality and a voice for the medical professionals who was never restrained from raising concerns on many controversial issues. Sr. Physician Cardiologist and President of Confederation of Medical Associations in Asia and Oceania & HCFI has left a legacy of contribution to public healthcare and support for the causes relating to the medical fraternity that would be dearly remembered. He was a friend of Swasthya and we pray for the peace for his soul and for the strength to his family to bear the loss. RIP Dr Aggrawal ji.

On behalf of Swasthya: Buddhdev Pandya MBE, Dr Sharad Agrawal, Mr CR Chandrasekar, Dr Santosh Mudholkar, Mr Amit Sinha, Dr Nandini Chakraborty

Improve patient safety by eliminating adverse events in health care settings

It is estimated that every year more than 300,000 patients acquire a healthcare associated infection (HCAI, HAI or nosocominal infection)as a result of care with in the NHS.



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